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~~ABSTRACT~~ ABSTRACT OF THE DISCLOSURE

The invention relates to a method of and a device for the formation of a three-dimensional image data set of a periodically moving body organ (11) of a patient (5) by means of an X-ray device (1) which includes an X-ray source and an X-ray detector (3), a motion signal (H, B) which is related to the periodic motion of the body organ (11) being measured simultaneously with the acquisition of the projection data sets (D_0, D_1, \dots, D_{16}). In order to improve such a method or such a device, notably in order to improve the construction and to reduce the time required for data processing while keeping the radiation dose for the patient as small as possible and while ensuring an as high as possible image quality, the invention proposes to acquire the projection data sets (D_0, D_1, \dots, D_{16}) necessary for the formation of the three-dimensional image data set successively from different X-ray positions (p_0, p_1, \dots, p_{16}) which are situated in one plane, to control the X-ray device by means of the motion signal (H, B) in such a manner that a projection data set (D_0, D_1, \dots, D_{16}) is acquired during a low-motion phase of the body organ (11) in each X-ray position (p_0, p_1, \dots, p_{16}) required for the formation of the three-dimensional image data set, and to use the projection data sets (D_0, D_1, \dots, D_{16}) acquired during the low-motion phase for the formation of the three-dimensional image data set.

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~~Fig. 1~~